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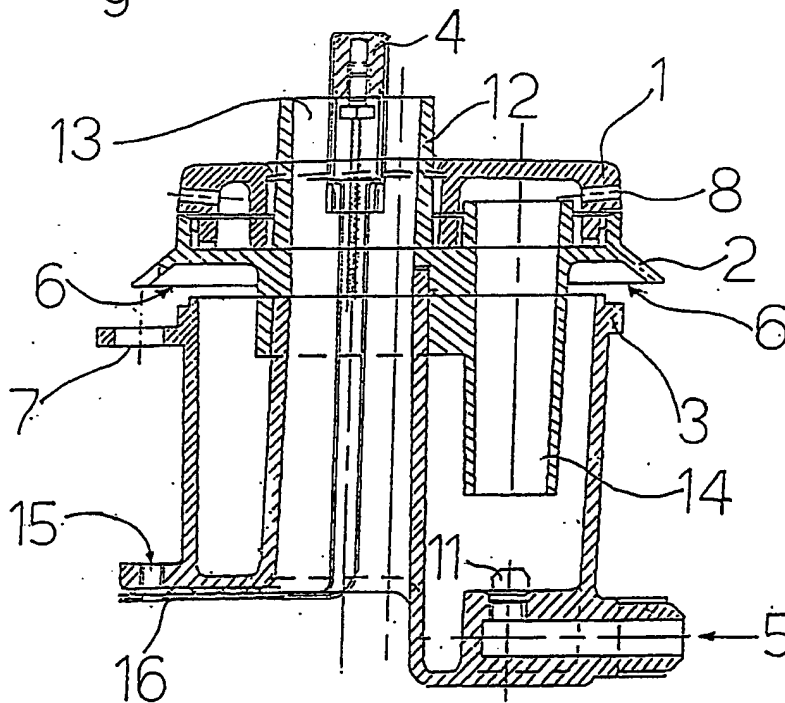
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**Improvements to a gas burner for food cooking.**

The present invention relates to a gas burner for food cooking, comprising a sensor of the temperature reached by food contained in heated containers.

The main feature of the burner is that the primary air for the air-gas mixture is taken from above the cooking plane.

Fig. 1



EP 0 392 523 A1

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The present invention relates to a gas burner for food cooking, comprising a sensor of the temperature reached by food contained in heated containers.

A burner of the type indicated is known for example by the Italian patent for industrial invention nr. 1.159.956.

Such patent describes a gas burner for the cooking of food contained in containers, to which there is associated an automatic control system of the temperature reached by the food, by means of a temperature sensor that is kept in contact with the bottom of the heated container.

Such a burner however presents some disadvantages, because it has been verified that the primary air quantity for the air-gas mixture, taken from the lower part of the burner, can be of some difficulty to control, with consequent mixing inconstancy, bad combustion, or even extinction of the flame, especially in the minimum position.

The invention is based on the recognition of the fact that it is harmful to take the air from a zone where the temperature can be altered due to the presence of an underlying oven, or other heat sources eventually connected with the automatic control system; and that an other troubling element is represented by taking the air from a zone in which turbulence is present, both for thermic convection effect, both in case that the system needs a forced ventilation to assure that electronic components do not reach dangerous temperatures. Purpose of the present invention is thus that to obviate to the indicated disadvantages of the known systems, teaching as it is possible to obtain a burner of the described type that even inspite of its simplicity assures mixing constancy of air and gas and thus a perfect combustion.

To achieve such purpose the present invention has for object a gas burner for food cooking, comprising a sensor of the temperature reached by food contained in heated containers, characterised by the fact that the primary air for the air-gas mixture is taken from above the cooking plane.

Further purposes and advantages of the present invention will be clear from the detailed description which follows and the annexed drawings, which are supplied only as an explanatory and not limiting example, wherein:

- figure 1 shows in section the burner according to the invention;
- figure 2 shows the flame-separator of the burner of figure 1;
- figure 3 shows the actual burner element of the device according to the invention;
- figure 4 shows the sump of the burner of figure 1;
- figure 5 shows the temperature sensor of the burner of figure 1.

In figure 1, which shows in section the burner according to the invention, reference number 1 indicates the first element of the burner, or flame-separator element; reference number 2 indicates the second element of the device, or actual burner; reference number 3 indicates the third element of the burner, or air-gas mixing sump; reference number 4 indicates the temperature sensor; reference number 5 indicates the gas entry, reference number 11 indicates the injector that feeds the gas to the mixing sump, or air-mixing sump; reference number 6 indicates the entry slot for the mixing primary air; reference number 7 indicates one of the holes used to fix the burner to the cooking plane.

The entry slot 6 for the air is a circular one; the air entering by it is fixed in the sump 3 with the gas entering by the entry 5; the mixture rises until the flame-separator 1; the flames exit through the holes 8.

The cooking container is supported in a known way by a support grill, not represented in the figures and which is arranged around the burner.

As shown the sensor 4 is disposed in a vertical passage, passing through the elements 1, 2 and 3 of the burner, and is secured inferiorly to the sump 3 by means of special screw, whose seat is shown in the figure.

The sensor 4 is partially shielded from the heat radiated by the flames overflowing through the holes 8 by means of the shield realized by the hollow cylindrical particular 12, while it is shielded from the conduction heat of the burner by means of the air flow which crosses the chimney 13.

Figure 2 shows in section and in view the flame-separator element 1 of the burner according to the invention; the reference number 9 indicates eight equidistant centring-teeth, arranged on a circumference.

Figure 3 shows in section the actual burner 2 of the device according to the invention.

From figure 1 it is possible to realize how the vertical passage for the temperature sensor, obtained in the elements 2 and 3, is also used for the vertical positioning of said second element in respect of said third element, so determining also the height of the entry slot for the primary air to be mixed with the gas.

In figure 4, which shows in section the sump 3 of the burner according to the invention, it is shown, indicated with reference number 10, a centring tooth, which engages in a special recess obtained in the burner element 2, as shown in figure 1; the tooth 10 is in effect a prolongation of the wall of the vertical passage for the sensor 4. The tooth 10 assures therefore the centring of the gas jet that exits through the gas injector 11 in respect of the Venturi tube indicated in figure 1 with reference

number 14.

In figure 5 there is shown the temperature sensor 4 of the burner according to the invention.

The sensor 4 superiorly includes a spring-cap, so that it is pressed against the cooking container, and internally, also superiorly, the element sensitive to the temperature, which is a resistor with negative temperature coefficient (NTC); such resistor is inserted in a suitable control electronic circuit, of known type, to maintain the container at a constant temperature.

The mechanic support having the purpose to house the element sensitive to the temperature (NTC) is secured to the third element of the burner 3 by means of a threaded hole 15 and a screw not shown in the figure.

To minimize the 'by contact' heat transmission to the mechanic support of the element (NTC) coming from the third element 3 of the burner, in the point of contact of the two particulars, protruding point-shaped elements, such as pyramidal protrusions, are provided to minimize the zone of contact.

The characteristics of the described burner are clear from the given description and the annexed drawings.

Also clear are the advantages of the balancing burner object of the present invention.

Specifically, they are represented by the fact that a constant supply of primary air quantity is warranted by simple means, assuring of consequence a perfect combustion in all the operation conditions.

It is clear that many variants can be apportioned to the burner, which has been described as an example, by the man skilled in the art, without departing from the novelty principles inherent to the invention.

For instance it is possible to realize the centring of the gas injector 11 in respect of the Venturi tube 14 by means of a hollow obtained in the particular 3 of the burner and a reference tooth obtained in the particular 2 of the burner.

3. Gas burner according to claim 2, characterised by the fact that for said sensor (4) there is provided a vertical passage through said first, said second and said third element.

4. Gas burner according to claim 3, characterised by the fact that said vertical passage is also used for the centring of said second element (2) in respect of said third element (3).

5. Gas burner according to claim 3, characterised by the fact that said vertical passage is also used for the vertical positioning of said second element (2) in respect of said third element (3), so determining even the eight of the entry-slot (6) for the primary air which has to be mixed with the gas.

6. Gas burner according to claim 3, characterised by the fact that the means that realizes said vertical passage also has the function of shielding at least partially the heat that could influence said sensor (4) both through irradiation and through conduction by the burner.

7. Gas burner according to claim 6, characterised by the fact that said shielding means includes a hollow cylindrical element (12) which protrudes from the first flame-separator element (1) and a chimney-path (13) which creates a flow of ascending air that cools said sensor.

8. Gas burner according to claim 6, characterised by the fact that said shielding means provides for protruding point-shaped elements (16) in the point of fixation of said sensor (4) to said third element (3) of the burner.

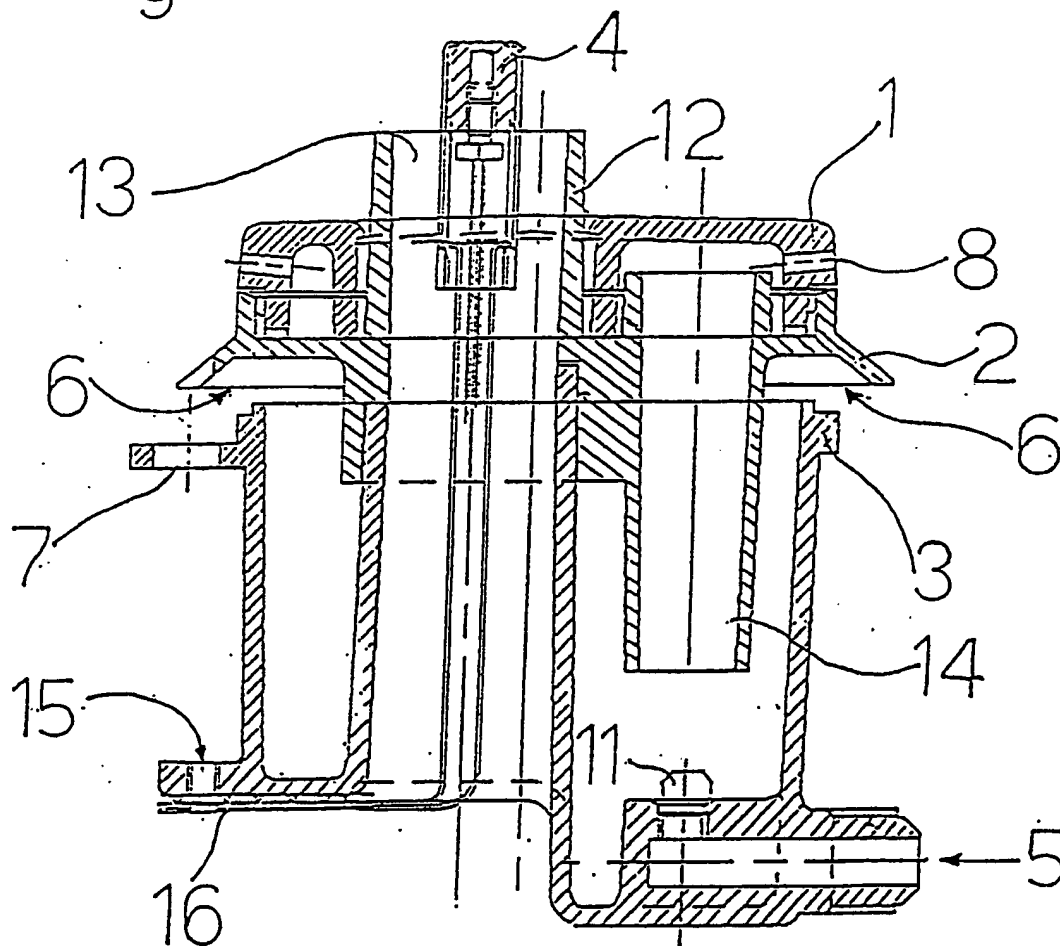
9. Gas burner according to claim 2, characterised by the fact that centring means (10) are provided between said second element (2) and said third element (3) to maintain constant the positioning of an air-gas mixing component (14), which is part of said second element (2), in respect of a gas injector (11), which is part of said third element (3).

## Claims

1. Gas burner for food cooking, comprising a sensor of the temperature reached by food contained in heated containers, characterised by the fact that the primary air for the air-gas mixture is taken from above the cooking plane.

2. Gas burner according to claim 1, characterised by the fact of include in the given order, from the top to the bottom, a first flame-separator element (1), a second element (2) which is the actual burner and a third sump-shaped element (3) wherein the mixing of the gas with the air occurs.

Fig. 1



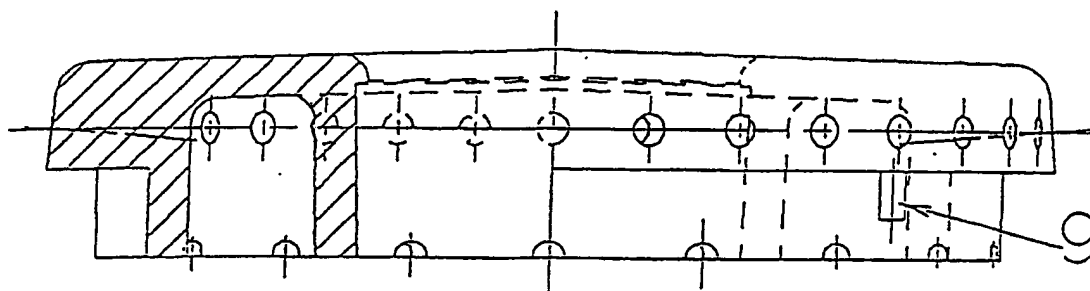


Fig. 2

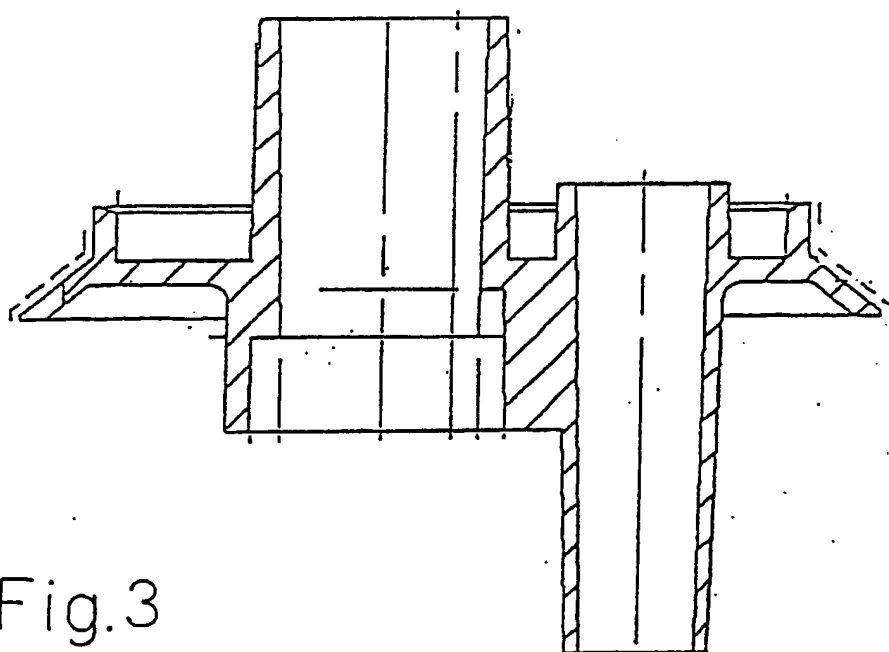


Fig. 3

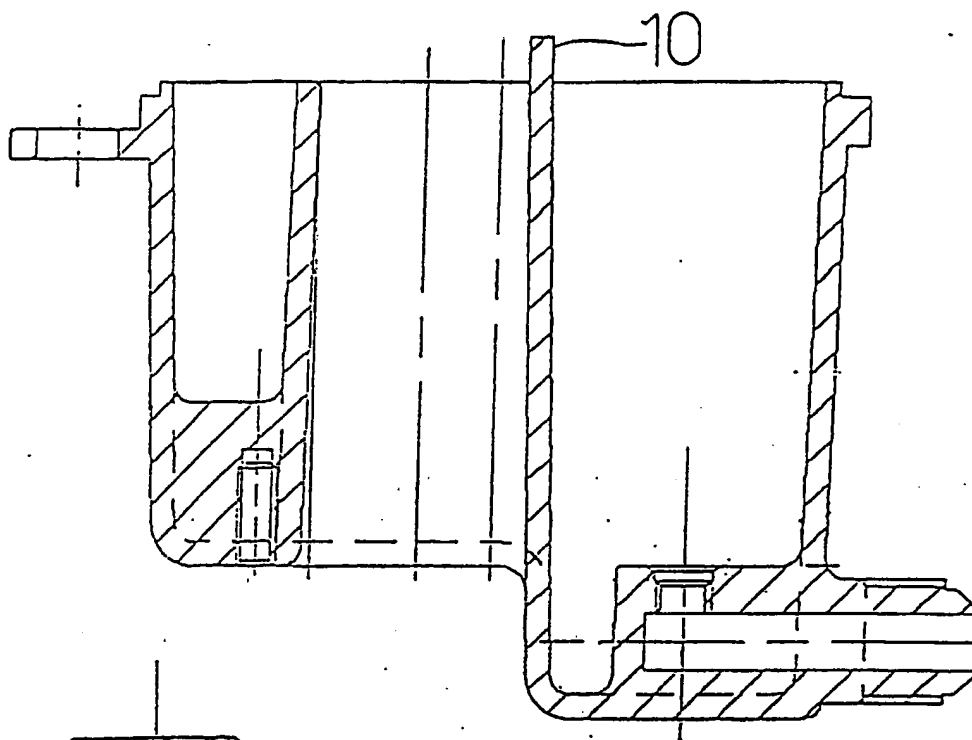


Fig. 4

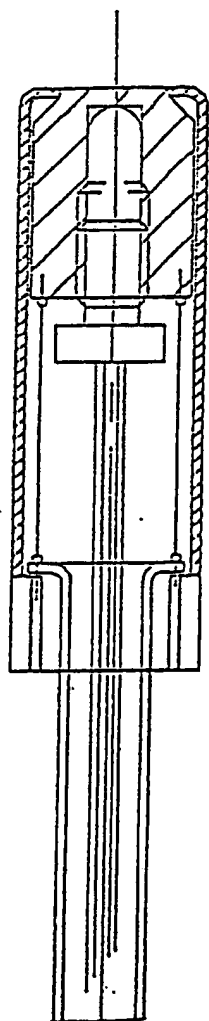


Fig. 5



European Patent  
Office

## EUROPEAN SEARCH REPORT

Application Number

EP 90 10 6985

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	FR-A-2507743 (SABAF SPA) * page 3, line 35 - page 4, line 11; figures * ----	1-3	F24C3/08
Y	FR-A-1561594 (IMPERIAL WERKE) * page 3, left-hand column, paragraph 3; figures * ----	1-3	
A	BE-A-902029 (SABAF SPA) * page 4, line 35 - page 5, line 9; figures * ----	1, 2	
A	DE-A-1808475 (MENA-LUX) * claims 1, 2; figure 1 * ----	1, 2	
A	GB-A-1347249 (PARKINSON) * page 1, line 69 - page 1, line 80; figure 1 * ----	6, 7	
A	DE-A-1454262 (BRITISH THERMOSTAT COMPANY) * claim 1; figures * ----	7	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			F24C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 17 JULY 1990	Examiner VANHEUSDEN J.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document	

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**ABSTRACT:**

CHG DATE=19990617 STATUS=O> The present invention relates to a gas burner for food cooking, comprising a sensor of the temperature reached by food contained in heated containers. The main feature of the burner is that the primary air for the air-gas mixture is taken from above the cooking plane.



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